the "Genera Plantarum" of Bentham and Hooker; but the most ardent admirers of that solid book could not expect it to appeal to the laity: it is designed for the use of specialists, and they alone will use it. Between this and the illustrated text-books intended for students there has been hardly any intermediate in this country, though Lindley's "Vegetable Kingdom," a book which still holds its place as a classic, served in the past a part not altogether unlike that which Dr. Engler's book may be expected to serve in the future. It is, however, in France that the nearest approach has been made to the idea of Dr. Engler. In the "Traité de Botanique" of Le Maout and Decaisne we have a volume profusely illustrated, and dealing with the vegetable kingdom as a whole: the English translation of this, edited by Sir J. D. Hooker, is familiar to all British botanists. Again, the "Histoire des Plantes" of Baillon, which is still in progress, is a classificatory work of large size, well illustrated as regards external morphology, but somewhat deficient in description of the internal details: his "Dictionnaire de Botanique," which commenced in 1876, is also still in progress, and covers, in dictionary form, much the same ground as his "Histoire." These are, then, the chief illustrated and descriptive works with which Drs. Engler and Prantl will have to compete. If we may judge from the first three numbers, the competition, though keen, will be in favour of the new enterprise, and that chiefly on the ground that the authors of it take a more general view of the subject. They do not confine their task to the description and delineation of external form, classification, and distribution. While giving due prominence to these branches, they also incorporate the results of recent investigations of anatomy and development. F. O. B.

OUR BOOK SHELF.

Nomenclature of Colours for Naturalists, and Compendium of Useful Knowledge for Ornithologists. By Robert Ridgeway, Curator, Department of Birds, United States National Museum. Ten coloured plates, and seven plates of outline illustrations. (Boston: Little, Brown, and Co., 1887.)

THIS will be a very welcome volume to naturalists in general, and ornithologists in particular. We do not know that everybody will agree with the principles laid down by the author, but he has, at all events, brought together a considerable number of colours, and given them very definite names for purposes of comparison, and a mere glance at the coloured plates will show how very important it is that every variety of green shown in Plate 10, for instance, should have its special name and admit of easy reference.

The comparative vocabulary of colours, which occupies a considerable proportion of the first part, is also a very valuable combination, and should be in the hands of naturalists of all civilized countries, as we get the English, Latin, German, French, Spanish, Italian, Norwegian, and Danish equivalents of all the colours shown in the coloured plates, and a great many more.

The *pièce de résistance* in the part of the volume which has been prepared chiefly for the use of ornithologists is a glossary of technical terms. It seems to us to have been very carefully done. A study of the plates illustrating the various feathers of birds, and the various birds' eggs, with the attached nomenclature, is certain to lead to a gradually increasing care in description. There is no doubt that the book will prove of very great value to many naturalists.

English Tobacco Culture, &c. Edited by E. J. Beale, F.L.S. (London: E. Marlborough and Co., 1887.)

THIS little book will serve as an important guide to farmers in conducting experiments in the cultivation of tobacco. It gives a detailed account of the origin of the movement for determining whether tobacco could be relied upon as a farm crop in Great Britain, and, if so, whether it could be cultivated to yield a profit to the grower. These two questions, it is maintained, have been answered in the affirmative by the results of last year's experiments, but this conclusion is founded more upon the appearance of the plants than upon actual results in the production of good commercial tobacco.

Seventeen varieties of tobacco were grown last year in this country, and a full description is given of the plants of each variety, with well-executed illustrations, showing the general appearance and distinctive features of the fully-developed plants. For each description of tobacco grown an "Estimated Balance Sheet" has been prepared, and the anticipated profit, amounting in some cases to as much as £25 and even £27 per acre, is very encouraging for farmers who may think of undertaking experiments in tobacco cultivation.

Perhaps the most useful part of the book is that devoted to directions for conducting the several operations of tobacco culture. These include the preparation of the land; the sowing of the tobacco seed; the transplanting of the young seedlings; the transferring of the plants to the prepared ground; and their subsequent treatment until finally harvested and cured. Altogether the book is prepared with great care, and its publication at the present time is very opportune.

Life of Charles Darwin. By G. T. Bettany. (London: Walter Scott, 1887.)

THIS is one of the series of volumes entitled "Great Writers." It was not to be expected that Mr. Bettany would be able to tell us anything absolutely new about the illustrious man of science concerning whom so much has already been written. He has, however, succeeded in presenting in a bright and attractive style the leading facts of Darwin's career, and he has done good service by taking pains to show that Darwin was not only a great thinker and discoverer, but a man of a singularly pure and noble character. Mr. Bettany's exposition of the results of Darwin's labours is brief, but clear and accurate, and he tries to mark as distinctly as possible the various stages in the process by which the theory of evolution as Darwin conceived it was itself evolved.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*

[*The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.*]

Thought without Words.

MAY I demur to the Duke of Argyll's statement that monkeys and dogs have no true reasoning powers? Long and careful attention given to the action of animals consequent on true reasoning power, has led me to an opposite conclusion. I do not trouble you with instances, or could give very many; and I have frequently seen reasoning power exercised after obvious thought over the best course to pursue. Then, *are* animals speechless among themselves? I think not, and believe they speak freely to one another at needed times, in their own language. And I certainly with my own domestic animals can understand in a certain sense their language. I clearly know

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what they ask for, or what they wish to call my attention to, from the tone of the voice and its modulations, and this is, I assume, language as regards them. On the main question, I should hold with Prof. Max Müller from my own personal experience. H. STUART WORTLEY.

South Kensington Museum, May 21.

I HAVE just noticed in a recent number of NATURE (May 12, p. 28) a letter from Mr. Francis Galton, in which he endeavours to prove that thought without words is by no means an impossibility. May I advance a small amount of confirmatory evidence which must, I think, have come within the notice of most people? This evidence is to be found in that peculiar state of mind produced when, as we say, we have a word "on the tip of the tongue." In this case the *idea* which the word, when found, will represent is most vividly present to the mind, but it is an idea only. No language is needed to make it recognizable even though, as oftens happens, the idea may be of the most complicated and abstract kind. HAROLD PICTON.

May 31.

Diatoms in the Thames.

IN NATURE, vol. xxxii. p. 223, you were good enough to publish a note from me respecting the occurrence in great profusion of small gelatinous bodies in the water surrounding the Isle of Sheppey. The same conditions prevailed at about the same time last year, and in all probability will reappear at the latter end of this month.

I have now to record that since the middle of April the sea hereabout has been what fishermen call "foul" from another cause. While the water has been unusually clear, in it have been floating an enormous quantity of diatoms. The most abundant is *Coscinodiscus concinnus*, the large disks of which can be seen by the naked eye in any sample of sea water dipped at random. Indeed in bright sunlight they can easily be observed in the sea itself. The other forms are *Rhizosolenia setigera*, and *Eucampia zodiacus*.

At low water the sands lying between the Thames and the Medway have been coloured a rich dark brown by the diatoms left stranded there.

The effect on marine life seems to have been somewhat varied. Mollusks appear to have thriven on the abundant food; and as shrimps and whitebait have been found in abundance in their usual haunts, it may be presumed that they have not been much annoyed by the diatoms. On the other hand, the flat fishes have been greatly disturbed, and could not be found on the banks usually frequented. Some fishermen said they had gone right away, and would not return till the water ceased to be "foul." Yet this could hardly have been the case, as some have since been caught on the Essex flats gorged with young cockles.

During the past fortnight I have examined the water at various points around Sheppey, and have invariably found the diatoms. In using the tow-net during this period, I have been struck by the scarcity of animal life. Besides the diatoms, a few Noctilucæ, larval Spios, and two Isopods were all that I noticed. That at least some diatoms are obnoxious to fish was settled by Mr. Pearcey, who, in conducting tow-netting investigations in the Shetland Isles in 1884, found that in regions where large floating banks of the diatom *Rhizosolenia shrubsolii* (Cleve) occurred animal life was almost entirely absent; and Mr. Isaac C. Thompson, of the Liverpool Marine Biological Society, has recorded a somewhat similar experience in 1885 off the North Wales coast.

It will be interesting to ascertain from which direction these countless myriads of diatoms have reached the Thames, and within what limits they have been found. To this end I invite observers round the British coast to examine the water in their respective localities, and to publish the result.

In water obtained from the coast of Holland I could not detect a single diatom.

I have reason to believe that an abundant influx of the same character has taken place in previous years, but coming at a time of year when the weather is not often favourable for conducting marine observations, the facts have escaped scientific notice. W. H. SHRUBSOLE.

Sheerness-on-Sea.

P.S.—The above was written about a fortnight ago, and now (May 18) the gelatinous masses are beginning to appear.—W. H. S.

The Structure of the Nostochineæ.

I WAS glad to see in NATURE, vol. xxxv. p. 594, a suitable notice of Prof. Borzi's very interesting paper on the above subject. So far as regards the discovery of the continuity of the protoplasm in this group of plants, I should like to be allowed to state that in my paper "On the Constitution of the Cell-wall and Middle Lamella," read February 10, 1884, and published in the Proceedings of the Cambridge Philosophical Society, vol. v. part ii., I drew attention to the fact that in *Nostoc* I had observed a continuity of the protoplasm between adjacent cells. But I simply stated the bare fact, and my note was therefore even more pronouncedly "una brevissima comunicazione" than that of Wille's on *Stigonema*, to which Prof. Borzi refers.

Clare College, Cambridge. WALTER GARDINER.

Curious Phenomenon in Capillarity.

FOR some years past I have been in the habit, when putting up at obscure hotels and remote "dák bungalows" during inspection tours, of putting a few drops of the cheap disinfectant known as "Little's soluble phenyle" into my tub before bathing. The bulk of the liquid, when dropped into clear water, diffuses downwards as a milky white emulsion, giving beautiful imitations of inverted cumulus clouds; but a small portion of it, perhaps some oily impurity in the mixture (which is sold under the trade mark C_6H_5, and should therefore presumably be a definite compound), instantly spreads out over the surface as a drop of oil would do, and then, strange to say, after the lapse of about half a second, and usually before the film has extended more than half-way across the tub, it again contracts. The contraction of the film proceeds until it is only two or three inches in diameter, after which its size appears to remain stationary; but about this time the distinct outline of the film usually disappears, owing to the gradual mixing of its substance with the water below—a circumstance which leads me to believe that the film is not caused by an oily impurity, but by a part of the "phenyle" itself, which possesses the property of emulsifying with water. Temperature seems to have no effect on the phenomenon, beyond perhaps modifying the rate at which the film expands and contracts, the effect being apparently exactly the same whether the liquid be added to a cold bath at 60° or to a hot one at 100° F.

Have any of your readers observed this phenomenon, or can anyone give a satisfactory explanation of it? According to the usual theory of the subject, the surface-tension of water in contact with air is greater than the tension of a phenyle-air surface *plus* that of a phenyle-water surface, and hence the film of phenyle spreads like one of oil. But after a time, when the phenyle gets partially emulsified, the sum of the tensions of the two phenyle surfaces must be greater than that of the water surface to make the film contract, and apparently after some further time a condition of equilibrium is established. Is there anything in the process of emulsification, or dividing a liquid up into minute globules suspended in another liquid, that will account for these changes of surface-tension?

Naini Tal, India, May 2. S. A. HILL.

Sense of Taste or Smell in Leeches.

I HAVE recently observed very well marked phenomena, similar to those described by Dr. C. O. Whitman (*Quart. Journ. Micro. Science*, vol. xxvi. new series, p. 409). I picked up with my fingers a stone from the soft muddy bottom of a shallow, torpid stream. Returning to the same spot a few minutes afterwards, I noticed a number of leeches (apparently *Hirudo* sp.) swimming near the spot. On the following day, suspecting that they had "smelt" or "tasted" my hand in the water, I first stirred the surface of the mud with a stick, but no leeches appeared; after the water was clear again I "washed my hands" in the water without disturbing the mud, and very soon a number of leeches came up and swam about. The soft mud in which they live is about a foot deep, and although the disturbance of the surface mud with a stick was not sufficient to bring them out, the "smell" or "taste" of my hands seems to have spread down and extended over an area of more than a yard.

Last year I had an opportunity on these hills of observing the very keen "scent" of the land leeches, who will come towards one's self or one's horse from the banks on either side of even a wide road. A. G. BOURNE.

Ootacamund, Nilgiris, April 11.

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